

VOLUME 31
FALL 1994
NUMBER 4



THE M.C.GILL DOORWAY

M.C. GILL CORP., 4056 EASY ST., EL MONTE, CA 91731 • PHONE (818) 443-4022 • FAX (818) 350-5880 • FAX (818) 279-6051



YOU'RE KNOWN BY THE COMPANY YOU KEEP
...And We Travel In Good Company

"If you're going to be successful..."

A UNIQUE COMPANY

Castle Industries of California is fairly typical of many small businesses serving the commercial aviation industry with specialty parts built to rigid quality standards. However, it is unique in that it is one of few such firms with a woman owner and president (notwithstanding our trivia item on page 8).

Castle was founded in 1950 by William "Leo" Castle. The then Seattle-based company grew and prospered through 1959 when Mr. Castle unexpectedly passed away. At the time, his wife Margaret Castle was a full-time mother and homemaker who says she never spent a day at the shop until her husband died.

Castle's bankers became quite worried about some large outstanding expansion loans to the company and asked Mrs. Castle to at least spend some time in the shop so it would appear someone was in charge until a solution could be devised. She reluctantly agreed, and 35 years later Mrs. Castle is still "going down to the shop".

Apparently, it pays off. In 1992, Castle Industries received Boeing's prestigious President's Award for Excellence as an Interiors and Airline Support Supplier of the Year. The M.C. Gill Corp. knows how difficult it is to win such an award and congratulates Mrs. Castle and Castle Industries.

M.C. Gill has said something like the above, but in this instance the quote is attributed to Margaret Castle, owner of Castle Industries in Ontario, California, and an M.C. Gill customer since 1980.

Mrs. Castle describes her company as a designer and manufacturer of sheet metal products. She's being overly modest. Castle has provided flight attendant and cockpit seats for Boeing commercial aircraft starting with the 707 right up through the 757 and 767.

MORE TO SEATING THAN MEETS THE EYE

Cockpit seating involves a bit more than building a frame, and padding and upholstering it. Castle has always done the usual static testing such as tensile strength and sandwich peel, but in recent years the FAA has required dynamic testing as well. This means strapping a 170-pound test dummy into a finished seat affixed to a "sled" that travels along a test track until it attains



Mrs. Castle and M.C. Gill discussing a flight attendant seat component.

a speed of 44 feet per second before a head-on collision with a concrete wall! Castle exceeds the FAA's "G" force requirements (ranging from 1.5 to 16 G's) by designing the seat to withstand 16 G's in each of five directions!

SPECIALIZED CONSTRUCTION

The framework for flight attendant seats Castle produces for Boeing are constructed from three sandwich panels manufactured by the M.C. Gill Corporation. All three have aluminum facings. The seat itself and the back-rest utilize an aluminum honeycomb core (Gillfab® 7111). The head-rest uses Nomex® (Gillfab 7113). The constructions were selected for their light weight and high strength, with peel values of 55 in./lbs. per 3" width and flatwise tensile of 900 psi.



The three components (left) that constitute the basis for the finished flight attendant seat (center). At right, essentially the same seat but double the width, used in the Boeing 767 and 747-400.

you have to be there everyday"

BALLISTIC LAMINATES FOR MILITARY AIRCRAFT

Castle also manufactures seating for some military aircraft with ballistic laminates as an integral part of the structure. These laminates, fabricated by Royal Plastic, Minden, Nebraska, an operating division of the M.C. Gill Corp., are constructed of Kevlar® reinforced polyester. Each seat consists of six parts and is designed to protect the seat's occupant from ground-to-air attacks. Castle has bought ballistic laminates from Royal since 1982.

CASTLE, LIKE M.C. GILL, A WELL-ESTABLISHED COMPANY

After Mr. Castle's death, Mrs. Castle moved the operation to Montclair, California in 1966. The first location had 19,000 square feet under roof. But the company outgrew the original site, and in 1988 moved to its present location in Ontario, California—a 2.5 acre site with 42,500 square feet

under roof. The move was fortuitous because, about the same time, Castle was awarded a major contract by Boeing to manufacture DADO panels—part of the air circulation system in the passenger cabin of the 747-400.

GILLFAB 5120 PROVIDES THE SOLUTION FOR ELECTRONIC EQUIPMENT CABINETS

Lockheed recently awarded Castle a contract for electronic equipment storage cabinets in the C-130. While the project was still in the design stage, the question of cabinet doors arose. They had to be thin, rigid, and light in weight, with little or no play in the doors when they were opened and closed. Because door heights ranged from about 14" to almost 84", with widths between 19" and 22", that feature was an area for some concern.

A sandwich panel was made with aluminum facings bonded to an

aluminum honeycomb core—a construction similar to the attendant seat panels but much thinner. Gillfab 5120 resulted from an improved capability for slicing honeycomb core in very thin slices, i.e., .040". A panel utilizing this thinner core can be used in applications such as shelving and cabinet doors. Other applications include instrument panels, panels exposed to severe vibration, and electronic package housings.

Gillfab 5120 offers light weight, flatness, and high flexural modulus. Weight savings are as much as 27 percent over panels with crushed core. Facing thickness depends on design considerations, and Castle selected .020"/.020" thicknesses for the Lockheed cabinets. The panels can be easily routed, cut and drilled, have good bolted joint pull-out strength, and inserts are seldom required.

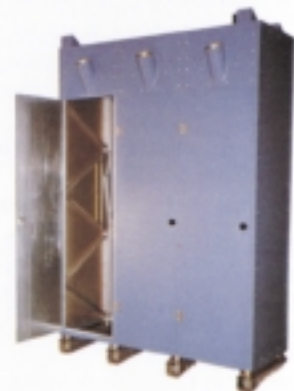
The graph on the next page shows differences in load vs. deflection



This observer's seat is designed to withstand 16 G's in each of five directions.



Ballistic laminates made by Royal Plastic protect the occupant of the finished seat from enemy fire from the side and below...



An electronic equipment cabinet for Lockheed's C-130, made from Gill's flat sheet stock (Gillfab 5120—aluminum faces and honeycomb).



M.C. Gill, with Mrs. Castle, admires the Castle Industries' 1992 "President's Award for Excellence" as Interior and Airline Support Supplier of the Year. We were proud to be nominated twice, but Castle won it!

between Gillfab 5120 and plate aluminum. The differences, especially given the variance in weight, are obvious and point out just a few of the reasons Castle Industries selected 5120 for their Lockheed project.

GILL AND CASTLE—TRAVELING IN GOOD COMPANY SINCE 1980

Castle Industries has been a valued Gill customer since 1980. At that time, Mrs. Castle had a requirement for the raw materials for the attendant seats and she learned of M.C. Gill through a mutual acquaintance.

She requested and was given a plant tour so she could see our facilities for herself before issuing the first purchase order. She was impressed with "the attention to detail" and also emphasized that "Gill was chosen because they've been in business a long time, just as we have. Once I pick a vendor I want to establish a long-term relationship with them. It's just good business."

From flight attendants' seats to ballistic laminates, Castle has learned that there are few requirements for composite panels and laminates that cannot be supplied by Gill.

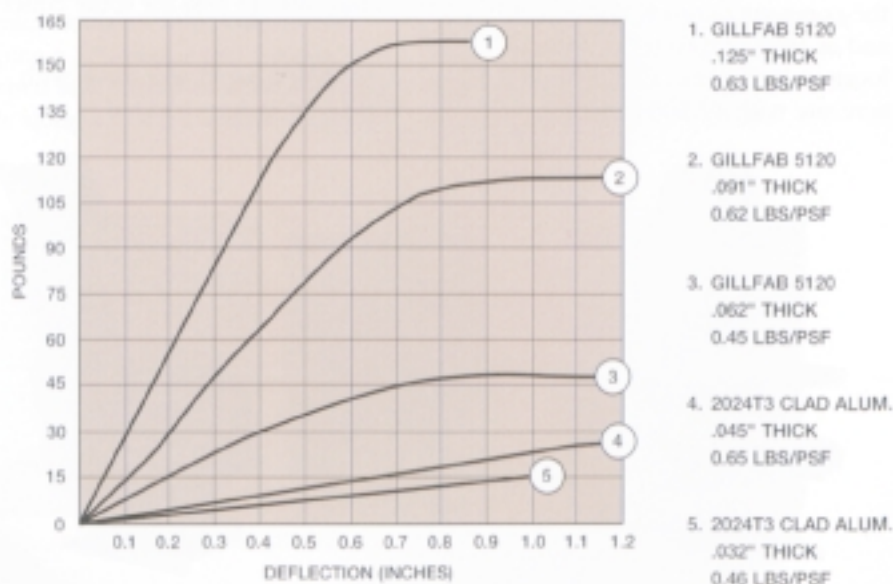
It appears that Castle Industries and the M.C. Gill Corp. have a common philosophy for success.

For example:

- Approximately 12 percent of their employees have been with them at least 20 years;
- Their products are qualified at major airframe manufacturers and airlines all over the world;
- Each believes strongly in vertical integration;
- They are well established businesses—their respective companies were founded in 1950 and 1945; and,
- They place a great deal of value on long-term vendor/customer relationships.

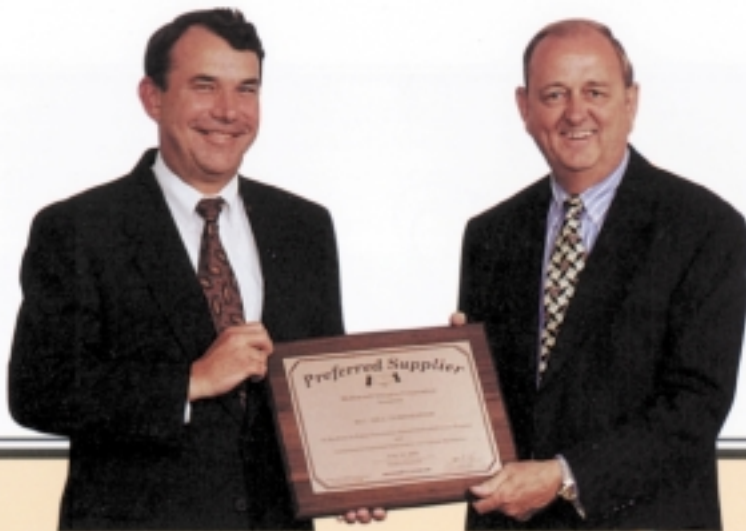
Editor's note: M.C. Gill is very sympathetic to and supportive of women in business—particularly those who own and operate their own companies, like Mrs. Castle. This positive attitude no doubt stems from the assistance and support his wife Ellen provided during his first 45 years in business. She was a tireless help-mate who matched M.C. step for step throughout those years. In fact, Ellen and M.C. Gill jointly received the coveted Western Plastics "Man-of-the-Year" Award in 1983 from the Society of Plastics Industries for outstanding achievement. The main speaker that evening was Lou Holtz, now Notre Dame football coach. Holtz dazzled the crowd with his penchant for magic—shredding a newspaper into confetti (not unlike his football teams do to their opponents week after week), mumbling a few words and making it appear whole again.

LOAD VS. DEFLECTION OF GILLFAB 5120 AND PLATE ALUMINUM



SIZE OF SPECIMEN: 3" X 10" FLEX: 8" SPAN, SINGLE POINT LOADING LOAD RATE: 600-700 LBS./MIN.

As the graph shows, at a 15 lb. load, the 0.46 lbs/psf aluminum plate (5 above) deflects one inch. At virtually the same load the 5120 (3 above) deflects only 0.2".



Stephen Gill, President and CEO, receiving McDonnell Douglas' Bronze award from Bob Cook, MDC's Manager of Purchasing.

M.C. GILL'S COMMITMENT TO EXCELLENCE PAYS OFF WITH AN MDC PREFERRED SUPPLIER AWARD

"Historically, the only time we visited a supplier was when they were in trouble." Thus spoke Bob Cook, Manager of Purchasing, McDonnell Douglas Company (MDC), St. Louis.

Not this time. Mr. Cook and Gary Hach, MDC's Group Manager, Production Procurement, were at the M.C. Gill Corporation to present Stephen Gill, President and CEO, with MDC's Bronze Award as part of their Preferred Supplier Certification program.

The program identifies suppliers committed to excellence and continuous improvement. When it was initiated in 1990, McDonnell Douglas had a supplier base of 7,300. The goal is to reduce that number to 2,500 and certify 450 preferred suppliers.

"PREFERRED STATUS" - NOT EASY TO COME BY

Suppliers must meet stringent criteria in three areas: performance, statistical control, and business assessment. Included in the evaluation process is an on-site visit by an MDC commodity/evaluation team.

Shortly after we were notified that MDC wanted to survey our performance as part of the Preferred Supplier Certification program, we received a packet containing a 200+ page questionnaire that was to be completed and returned for review by MDC prior to their inspection visit. We had already compiled most of the information required

for our own use and it was a matter of adapting the write-up of our processes and procedures to the MDC format.

The assessment team visited the M.C. Gill Corp. in June, 1994. They met and worked with employees from all eight Company departments. Based on the results of this four-day visit, we were given scores of from one to five points (five being highest) in each of five categories: management, delivery, quality, technology, and cost.

AMONG THE TOP 12%

We are very pleased with and proud of the Bronze. It means we achieved a minimum 90 percent on-time delivery rating, a minimum 95 percent quality acceptance, and that we are in the top 12 percent of MDC suppliers. Of the almost 375 suppliers certified thus far, only two have received a Gold ranking and 65 a Silver.

Proud as we are, we should point out that the service, quality, and pricing we provide McDonnell Douglas is no different than that we have been offering our other customers for many years.

During the ceremony, Brad Chalmers, McDonnell Douglas Manager of Raw Materials at their Huntington Beach facility stated that they had given us many challenges in the past, that we had met them head-on and with an increased customer focus. He closed his remarks with a "Thank you for a job well done." To which we would respond, "Thank you for the opportunity."



Stephen Gill with a McDonnell Douglas contingent on band.



The major M.C. Gill players who made the Bronze award possible.

THE PROOF OF *Quality* IS ONLY IN THE PERFORMANCE

IN-SERVICE TESTING TELLS THE TRUE STORY

M.C. Gill believes you find what works, determine the properties that differentiate from what does not work, and only then write the specifications. In our field that sequence is seldom followed, resulting in too much time and money being spent trying to meet values that are inappropriate or meaningless as they relate to service.

Our proprietary products, beginning in the early 60's with Gilliner 1066 and Gillfloor 5007, were service tested first. Then the specs were written, and laboratory tests were used to control quality and

weed out the good from the bad. Often, new tests must be developed, and then comes the difficulty of standardization, which can take years.

We constantly monitor the performance of the parts we manufacture for the aviation industry. M.C. is a stickler for keeping track of the products we've sold over the years as shown by the following examples which also represent, in part, the evolution of the M.C. Gill product line. They exemplify the pioneer's search for the right product mix, and despite the fact that we no longer make some of the products, M.C. continues to track their performance.

The Los Angeles Department of Water and Power building at night.



M.C. on his periodic inspection trip to inspect the panels at the top of the Water and Power building.

A slight yellowing is the only difference now and when they were installed in 1964.



FIBERGLASS PANELS at the top of the Los Angeles Dept. of Water and Power building house communications equipment. The panels were installed in 1964, and their long life has mildly surprised even M.C. He inspected the panels in 1974 and observed that they would probably exceed their originally expected service life of 20 years! He inspected the panels again this July for his 1990's inspection and found that they looked as good as the day they were installed in 1964, except for slight yellowing on some of the panels. Fiberglass panels were chosen because they had to be radar transparent and able to withstand the elements, including 100 mph

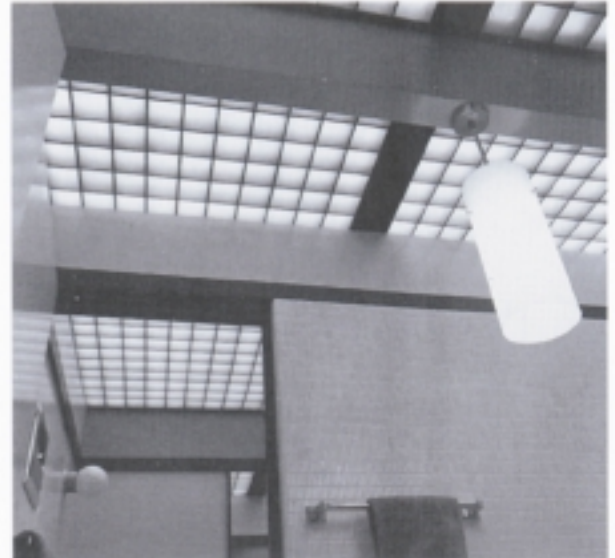
winds (probably created by the helicopters landing on the heliport above). Gillfab 5028 consists of two broad crown, hat section fiberglass panels bonded back-to-back (brim-to-brim) to achieve the desired rigidity. We also manufactured the fiberglass "H" sections that join the 4' x 11' panels, as well as the fiberglass angles used as corner closures. The panels are constructed from a "random" glass mat which reinforced the acrylic modified polyester resin. Their longevity is testimony to the special bonding fixture, polyester adhesive, and resin technology that advanced the state-of-the-art more than 30 years ago.

ROOFING PANELS—THE SUPREME TEST When M.C.'s home was built in 1964, the architects specified fiberglass reinforced polyester plastic in as many applications as seemed practical for "in-service" testing. However, "fools rush in where angels fear to tread" best typifies M.C.'s decision to adapt modular sandwich



The roof is flat without pitch; constructed of 4' x 8' and 4' x 12' modular sandwich panels. The top weathering skin is a glass cloth-polyester laminate; the bottom, or interior, skin is of 1/4" walnut; the core was 2 pcf polyurethane foam, 2 1/2" thick. In recent years, however, a 6 pcf end grain balsa wood core has proven to be more desirable. The panels are sealed between each other with a polyester fiberglass cloth "wet lay-up".

panels to a flat roof in Southern California. There is one shortcoming common to all flat roofs—they occasionally leak, although they are easy to find and correct on M.C.'s roof. Much progress has been made over the roof's 30-year life, and that will continue as better raw materials are developed.



Other panels have fiberglass on both sides to create a skylight effect. Topside panels are a milky translucent polyester fiberglass weathering skin with 4" egg-crate squares of 1/4" tempered masonite as the core. The clear bottom skin coupled with the milky top skin provide soft and pleasing interior illumination.



HIGHWAY SIGNS

M.C. Gill used to make some of the laminated ground-mounted sandwich panel highway signs for the State of California. The construction of burn resistant fiberglass-polyester faces and paper honeycomb core was designed to resist impact, puncture and weathering for 20 years. We check weathering because we have an identical sign at our Easy Street location installed in 1971. Field inspection of other signs has shown little loss from impact and only a few white borders and reflector buttons have been damaged. The inset shows the roof of M.C.'s home. The different colored panels are standard color highway sign laminates (weathering sheets) built into the roof for service testing against the inhospitable California elements.



LABORATORY COUNTER TOPS

We supplied grey Gillab® 990C counter tops for the chemistry research labs installed at U.C.L.A. in 1959 and olive green counter tops throughout the many laboratories in the University of California's 16-story Medical Research Unit in San Francisco, completed in 1966, as shown here. Periodic follow-up calls to check on the condition of the counter tops were last made in July, 1994. According to the Superintendent of Building and Grounds at the Unit in San Francisco, most of the counter tops are "still in service and holding up extremely well".

THE FUNNY SIDE

THE FOLLOWING ARE EXCERPTS FROM REPORTS OF CAR INSURANCE POLICY HOLDERS DESCRIBING THEIR PARTICULAR ACCIDENTS

"I thought my window was down but found it was up when I put my hand through it."

★★★★

"The guy was all over the place. I had to swerve a number of times before I hit him."

★★★★

"The indirect cause of this accident was a little guy in a little car with a big mouth."

★★★★

"I pulled away from the side of the road, glanced at my mother-in-law and beamed over the embankment."

★★★★

"The accident occurred when I was attempting to bring my car out of a skid by steering it into another vehicle."

★★★★

"I was driving my car out of the driveway in the usual manner, when it was struck by the other car in the same place it had been struck several times before."

★★★★

"I was on my way to the doctor's with rear-end trouble when my universal joint gave way, causing me to have an accident."

★★★★

"As I approached the intersection, a stop sign suddenly appeared in a place where no stop sign had ever appeared before. I was unable to stop in time to avoid the accident."

★★★★

"The telephone pole was approaching fast. I was attempting to swerve out of its path when it struck my front end."

★★★★

"To avoid hitting the bumper of the car in front, I struck the pedestrian."

★★★★

"My car was legally parked as it backed into the other vehicle."

★★★★

"An invisible car came out of nowhere, struck my vehicle and vanished."

★★★★

"When I saw I could not avoid a collision, I stepped on the gas and crashed into the other car."

★★★★

"The pedestrian had no idea which direction to go, so I ran over him."

★★★★

"I saw the slow-moving, sad-faced old gentleman as he bounced off the hood of my car."

NEW SALES AGENT FOR GREAT BRITAIN AND IRELAND

The M. C. Gill Corporation has appointed Zurburggen Aircraft Products as its exclusive sales agent for Great Britain and Ireland. Hans Zurburggen, who also represents Gill in Germany, Austria, Denmark, and the Benelux countries, can be reached at Geroweg 10, 33014 Bad Driburg, Germany; Phone: 49 5253-98810; Fax: 49 5253-988181.

Trivia

Women-owned businesses employ more people than all Fortune 500 companies.

★★★★

America's windiest city is Cheyenne, Wyoming with an average wind speed of 12.9 mph. Chicago was ranked 21st.

★★★★

A California condor lays one egg every two years, and an oyster 500 million every year.

★★★★

Wild turkeys can't instantly take off vertically.

★★★★

A puppy grows in 18 months at the rate a person does in 18 years.

★★★★

It took Cyrus McCormick 10 years to sell the mechanical reaper after he invented it.

★★★★

Women comprise more than half the students in cloven colleges.

★★★★

More babies are born in the U.S. on Tuesday than any other day of the week.

★★★★

About half of all U.S. physicians in private practice offer employer-provided health insurance.

★★★★

Twice as many Americans cite TV as their primary source of medical information as cite doctors.

★★★★

Guns are manufactured in the United States at the rate of 360 per hour.

★★★★